

Amendment and Response under 37 C.F.R. 1.116
Applicant: Winthrop D. Childers
Serial No.: 10/634,024
Filed: August 4, 2003
Docket No.: 10971935-17
Title: INK DELIVERY SYSTEM ADAPTER

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REMARKS

The following remarks are made in response to the Final Office Action mailed September 1, 2006, in which claims 39-41 and 43-51 are rejected, and claim 42 is objected to. With this Response, claims 39, 40 and 43-45 have been amended, and claim 42 has been cancelled. Claims 39-41 and 43-51 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 112

Claims 39-51 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claims the subject matter which applicant regards as the invention.

Regarding claims 39 and 41, the Office Action states:

"In claim 39, it is not understood how the replacement ink information can be 'associated' with the replaceable ink container without an attached memory device, how the signal source can exchange the information since it is not connected to the container and how the recitation 'controller' and 'replaceable ink container' is read on the preferred embodiment or seen on the drawings. The same is true for reciting 'replaceable ink reservoir' in claim 41."

The Examiner's attention is directed to Figures 1 and 18 of the instant application, and also to the specification at, for example, page 8, lines 5-17, page 17, lines 6-10, and page 29, lines 6-16. Figures 1 and 18 and referenced portions of the specification clearly describe how each ink container has unique ink container-related aspects (e.g., "ink information") that are represented in the form of data stored on an information storage device or signal source. Replacement ink information is "associated" with a replaceable ink container and replacement ink by virtue of the fact that the information describes unique replacement ink container-related characteristics. Claim 39 has been amended to make clear that the signal source stores the replacement ink information.

The signal source (storing the ink information) does not need to be connected to the ink container to exchange information, because the signal source exchanges information with the controller (which is a part of the printing system, but not a part of the ink container). Thus, as set forth in claim 39, the electrical signal source is separate from and not coupled to the replaceable ink container.

Regarding the Examiner's question of how the recitation "controller" and "replaceable ink container" is read on the preferred embodiment or seen on the drawings,

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Applicants respectfully submit that Figures 1 and 18 and associated portions of the specification at page 8, lines 5-17, and page 29, lines 6-16, respectively, clearly describe the elements in question. The same is true for the "replaceable ink reservoir" in claim 41,

Regarding claims 40, 44 and 45, the Office Action states:

In claim 40, the recitation "a replacement ink" on line 2 and "replacement ink information" on line 3 is confusing because it is unclear if these are additional "ink" and "information" or further recitation "replacement ink" and "replacement ink information" on line 3 of claim 39. The same is true for reciting "replacement ink supply information" on line 2 of claim 44, "memory device" in claim 45.

Claims 40 and 44 have been amended to make clear that "replacement ink," "replacement ink information," and "replacement ink supply information" are further recitations of the earlier presented elements. Claims 43 and 45 have been amended to make clear that two different memory devices are recited.

Regarding claim 42, the Office Action states:

In claim 42, it is unclear where the "replaceable ink reservoir" on line 3 comes from, how the reservoir can be "coupled" to the system and how the signal source can recognize this reservoir.

The limitation of claim 42 has been incorporated into independent claim 39, and the term "replaceable ink reservoir" changed to read "replaceable ink container." The claim now also specifies that the ink container is "fluidically coupled" to the printing system.

Regarding claim 43, the Office Action states:

In claim 43, it is not unclear where the "replacement ink supply" on line 7 comes from, how the source can exchange the information with the ink supply without being connected to it, and how the recitation "controller", "first ink supply", "first ink supply information", "replacement ink supply" and "replacement ink supply information" is read on the preferred embodiment or seen on the drawings.

Applicants fail to understand why it is relevant where the "replacement ink supply" on line 7 comes from. The claim simply requires "an electrical signal source for exchanging replacement ink supply information *about* a replacement ink supply." Regarding how the signal source can exchange the information with the ink supply without being connected to it, Applicants point out that the signal source exchanges information with the controller; there is no need for the signal source to be connected (physically, electrically, or otherwise) with the ink supply. Regarding how the recitation "controller", "first ink supply", "first ink supply information", "replacement ink supply" and "replacement ink supply information" is read on the preferred embodiment or seen on the drawings, Applicants refer the Examiner to, for

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example, Figures 1 and 18, page 8, lines 5-17, page 17, lines 6-10, and page 29, lines 6-16 of the instant application, where the elements in question are described.

Regarding claim 45, the Office Action states:

In claim 45, it is unclear how the replacement ink supply can be "used" on line 4 of claim 45.

Claim 45 has been amended to specify "usage of the replacement ink supply *by the printing system.*"

As amended and for at least the reasons presented above, claims 39-51 are believed to particularly point out and distinctly claims the subject matter which Applicants regard as the invention. Accordingly, withdrawal of the rejection of claims 39-51 under 35 U.S.C. 112, second paragraph, is respectfully requested.

Claim Rejections under 35 U.S.C. § 102

Claims 39-41 and 43-44 and 46-51 stand rejected under 35 U.S.C. 102(e) as being unpatentable over Gragg et al. (U.S. Patent 5,757,390).

The Office Action alleges that Gragg et al. discloses in Figure 4 a printing device comprising: a controller (106); an ink cartridge (20) which is replaceable since it is removable inserted into a carriage (12); a replacement ink supply (60) being supplied from a remote ink reservoir (62); a signal source or a memory (108) separate from the controller (processor 106) and not coupled to an ink reservoir (20), wherein the memory (108) stores information of the volume of the ink in the cartridge (20) in the form of a look-up table (referencing lines 1-9, column 9) and it is connected to the processor (106) with inherent cables and connectors; an inlet (56) coupled to a head (26) (referencing Figure 7); an unmarked outlet coupled to the reservoir (62), wherein the fluid outlet is remotely located from the ink supply inlet (56), and wherein the fluid outlet is fluidically connected to the ink supply inlet (56) via a flexible fluid conduit (38); and wherein the electrical signal source (108) is remotely located from the replacement ink supply.

Under 35 U.S.C. §102, the cited reference must show each and every feature of the claimed invention. Extension of or speculation as to the cited teaching is permitted only when *necessarily present* in the disclosed apparatus or method. In other words, if a particular feature is not specifically disclosed it can only be relied upon under 35 U.S.C. §102 if and only if such feature is necessarily present in the disclosed apparatus or method. See,

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Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference”), and *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989) (“The identical invention must be shown in as complete detail as is contained in the ... claim”).

Independent claim 39, as described below under the heading “Allowable Subject Matter,” has been amended to include the limitations of “objected to” claim 42. Accordingly, claim 39, as amended, and the claims depending therefrom (i.e., claims 40 and 41) are believed in allowable condition, and withdrawal of the rejections under 35 U.S.C. 102(e) is respectfully requested.

Independent claim 43, as amended, sets forth a replacement source of signals for a printing system, the printing system having a receptacle for receiving a first ink supply, a controller which exchanges first ink supply information with a first memory device coupled to the first ink supply, and an ink supply inlet fluidically connected to a printhead. The replacement source of signals comprises: an electrical signal source for exchanging replacement ink supply information about a replacement ink supply with the controller, the replacement ink supply information exchanged with the controller in place of first ink supply information from the first memory device, wherein the electrical signal source is separate from and not coupled to the replacement ink supply; and a connector for separably electrically connecting the electrical signal source to the controller.

Applicants respectfully submit that Gragg et al. fails to show each and every feature of claim 43. In particular, Applicants submit that Gragg et al. makes no teaching or suggestion regarding *at least an electrical signal source for exchanging replacement ink supply information about a replacement ink supply with the controller, the replacement ink supply information exchanged with the controller in place of first ink supply information from the first memory device, wherein the electrical signal source is separate from and not coupled to the replacement ink supply, and such feature is not necessarily present* in the disclosed apparatus. Gragg et al. teaches a system for monitoring

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ink volume in an ink reservoir carried on-board a print head carriage and replenishing the ink from an off-board ink supply not positioned on the print head carriage. An ink replenishment controller 104 (comprising processor 106, memory 108 and clock 110) controls replenishment of ink in the on-board ink reservoir. (Col. 7, lines 27-45). Programmed into memory 108 is a functional relationship between a volume of ink in the on-board reservoir and an amount of light sensed by photosensor 128, (Col. 9, lines 10-25). Although the Office Action characterizes processor 106 of Gragg et al. as a controller, and memory 108 as a signal source separate from the controller, Gragg et al. still makes no teaching or suggestion regarding **an electrical signal source for exchanging replacement ink supply information about a replacement ink supply with the controller, *the replacement ink supply information exchanged with the controller in place of first ink supply information from the first memory device*, wherein the electrical signal source is separate from and not coupled to the replacement ink supply, as set forth in amended claim 43.** There certainly is no teaching or suggestion in Gragg et al. that the noted claim element is *necessarily present*. For at least these reasons, Applicants respectfully submit Gragg et al. fails to teach or suggest each and every feature of the invention as set forth in amended independent claim 43. Accordingly, withdrawal of the rejection of claim 43 under 35 U.S.C. §102(e) is respectfully requested.

Claims 44 and 46-51 each depend, either directly or indirectly, from independent claim 43 which is in allowable condition for at least the reasons set forth above. Accordingly, dependent claims 44 and 46-51 are also in allowable condition at least by reason of their dependency from claim 43, and withdrawal of the rejection under 35 U.S.C. §102(e) is respectfully requested.

Claim Rejections under 35 U.S.C. § 103

Claims 39, 41 and 43-46 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hillmann et al. (U.S. Patent 5,365,312).

The Office Action alleges Hillmann et al. discloses in Figures 1-2 a printing device comprising: a controller (16); a signal source or a memory (14) containing the replacement ink information, see lines 39-67, column 4, attached to a replacement ink container (11, 12) having an inlet port (13) coupled to a head (10); an inherent flexible bus cable (15) for

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connecting the signal source (14) to the controller (16), wherein the electrical signal source (14) contains a memory device which has a write portion which is adapted to be updated by the controller to provide an estimate of a volume of the replacement ink supply during usage of the replacement ink supply (referencing column 6, lines 15-32).

The Office Action acknowledges that Hillmann et al. does not disclose that the signal source (14) is separate from and not coupled to the ink container (11, 12). For example, the signal source (14) of Hillman et al. is externally glued to the housing of the container (11, 12). The Office Action alleges that because the signal source (14) is a separate assembly from the ink container (11, 12), a skilled artisan would realize that it can be mounted anywhere, i.e., a carriage or frame of the printing device, without alternating the performance of the printing device. Thus, the Office Action concludes that mounting the signal source of Hillmann et al. on the frame of the printer is considered to be a matter of a mechanical design expedient for an engineer, and it would have been obvious to a person having skill in the art at the time the invention was made to mount the signal source (14) of Hillmann et al. on the frame or the carriage for the purpose of reducing size of the ink cartridge.

Referring to Section 706.02 (j) of the MPEP, to establish a *prima facie* case of obviousness, three basic criteria must be met:

- (1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference to combine reference teachings;
- (2) There must be reasonable expectation of success;
- (3) The prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on Appellant's disclosure. See *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (F.E.D. Cir. 1991).

As referenced above under the heading "Claim Rejections under 35 U.S.C. § 102" and described below under the heading "Allowable Subject Matter," independent claim 39 has been amended to include the limitations of "objected to" claim 42. Accordingly, claim 39, as amended, and the claims depending therefrom (i.e., claims 40 and 41) are believed in allowable condition, and withdrawal of the rejections under 35 U.S.C. 103(a) is respectfully requested.

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With regard to amended independent claim 43, Applicants respectfully submit that Hillmann et al. cannot support a case of prima facie obviousness as to the claim because, among other possible reasons, the reference fails to teach or suggest all of the elements of the claimed invention, and there is no motivation to modify the reference as contended in the Office Action.

Independent claim 43, as amended, sets forth a replacement source of signals for a printing system, the printing system having a receptacle for receiving a first ink supply, a controller which exchanges first ink supply information with a first memory device coupled to the first ink supply, and an ink supply inlet fluidically connected to a printhead. The replacement source of signals comprises: an electrical signal source for exchanging replacement ink supply information about a replacement ink supply with the controller, the replacement ink supply information exchanged with the controller in place of first ink supply information from the first memory device, wherein the electrical signal source is separate from and not coupled to the replacement ink supply; and a connector for separably electrically connecting the electrical signal source to the controller.

Hillmann et al. describes ink reservoirs 11, 12 having electronic memory means 14 in the form of a chip in which information about the reservoirs are stored. The memory 14 counts consumption of the ink. A reprogramming of the memory 14, and thus refilling of the reservoirs 11, 12, is not possible. (Abstract). As noted above, the Office Action acknowledges that the reference does not disclose all of the elements of the claimed invention (specifically, that the memory 14 is separate from and not coupled to the ink container 11, 12; Office Action, page 5). To overcome the acknowledged deficiency, the Office Action alleges a skilled artisan would realize that the memory 14 can be mounted anywhere without alternating the performance of the printing device, and further that the location of memory 14 is a matter of design choice. The Office Action concludes it would have been obvious to a person having skill in the art at the time the invention was made to mount the memory 14 of Hillmann et al. on the frame or the carriage for the purpose of reducing size of the ink cartridge.

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However, the mere fact that a reference can be modified does not render the resultant modification obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." 916 F.2d at 682, 16 USPQ2d at 1432). There is simply no suggestion in Hillmann et al. that making memory 14 separate from and not coupled to the ink supply is in any way desirable. The motivation suggested in the Office Action (i.e., reducing the size of the ink cartridge) is not supported by any suggestion in Hillmann et al. that size of the memory 14 or ink cartridges 11, 12 is problematic, or that a smaller cartridge is desirable. In fact, Figure 2 of Hillmann et al. suggests that removing memory 14 from the cartridge would have no or minimal impact on the size of the cartridge.

In addition, modification of Hillmann et al. as suggested in the Office Action (i.e., mounting memory 14 separate from cartridges 11, 12) would render memory 14 unsatisfactory for its intended purpose. In particular, memory 14 is intended to prevent refilling and reuse of the ink reservoir. (Abstract; col. 3, lines 21-26). Separating memory 14 from the cartridge would make refilling and reusing the ink reservoir easier, contrary to the intended purpose of memory 14. If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). For at least these reasons, there is no motivation to modify Hillmann et al. as suggested in the Office Action.

For at least the reasons set forth above, Applicants respectfully submit Hillmann et al. fails to make obvious the invention as set forth in amended independent claim 43. Accordingly, withdrawal of the rejection of claim 43 under 35 U.S.C. §103(a) is respectfully requested.

Claims 44-46 each depend directly from independent claim 43 which is in allowable condition for at least the reasons set forth above. Accordingly, dependent claims 44-46 are also in allowable condition at least by reason of their dependency from claim 43, and withdrawal of the rejection under 35 U.S.C. §103(a) is respectfully requested.

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Allowable Subject Matter

The Office Action objected to claim 42 for being dependent upon a rejected base claim, but indicated the claim would be allowable if rewritten in independent form including all limitations of the base claim and any intervening claims and if rewritten to overcome the 35 U.S.C. §112 rejections.

With this amendment, the limitation of claim 42 has been incorporated into independent claim 39, and claim 42 cancelled from the application. As discussed above, the 35 U.S.C. §112 rejections have been addressed. Accordingly amended independent claim 39 is now believed in allowable condition, and notice to that effect is respectfully requested.

CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 39-41 and 43-51 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 39-41 and 43-51 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(h)(i). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 08-2025.

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The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to either Matthew B. McNutt at Telephone No. (612) 767-2510, Facsimile No. (612) 573-2005 or Thomas A. Jolly at Telephone No. (541) 715-7331, Facsimile No. (541) 715-8581. In addition, all correspondence should continue to be directed to the following address:

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CERTIFICATE UNDER 37 C.F.R. 1.8:

The undersigned hereby certifies that this paper or papers, as described herein, are being transmitted via facsimile to Facsimile No. (571) 273-8300 on this 2nd day of October, 2006.

By: 

Name: Matthew B. McNutt